

GLENCOE  
Correlation

---

**Glencoe**

# **Algebra 2**

© 2003

**UTAH**  
Intermediate Algebra

**GLENCOE CORRELATION**  
**ALGEBRA 2**  
**UTAH**  
**Intermediate Algebra**

OBJECTIVES	PAGE REFERENCES
<b>Standard 1: Students will acquire number sense and perform operations with real and complex numbers.</b>	
<b>Objective 1.1: Compute fluently and make reasonable estimates.</b>	
1. Simplify numerical expressions with rational exponents.	SE: 257-262 TWE: ICE 258-260
2. Add, subtract, and multiply complex numbers.	SE: 270-275 TWE: ICE 272-273
3. Add, subtract, and multiply matrices using paper and pencil for simple cases and technology for more complicated cases.	SE: 160-166, 167-173, 175-181 TWE: ICE 161-163, 168-170, 176-178
4. Find the multiplicative inverse of a matrix using paper and pencil for a 2 x 2 and technology for larger matrices.	SE: 195-201, 202-207 TWE: GCI 205 ICE 196-197, 203-204
<b>Objective 1.2: Represent complex numbers in a variety of ways.</b>	
1. Extend the number system to include complex numbers in the form $a + bi$ .	SE: 270-275 TWE: ICE 270-273 OEA 275
2. Identify the need for the square root of a negative number and define the imaginary number $i = \sqrt{-1}$ .	SE: 270-275 TWE: DI 246 SN 273
3. Simplify expressions involving radical expressions including square roots of negative numbers.	SE: 245-249, 250-255, 257-262, 270-275 TWE: ICE 246-247, 251-253, 258, 260, 270-273
<b>Objective 1.3: Identify relationships among real numbers and operations involving these numbers.</b>	
1. Identify matrices that can be added, subtracted, or multiplied.	SE: 160-166 TWE: ICE 161
2. Demonstrate that matrix multiplication is not commutative.	SE: 169-173 TWE: ICE 170
3. Identify additive and multiplicative identities and inverses of a matrix when they exist.	SE: 195-201, 202-207 TWE: ICE 196-197, 204 OEA 201
<b>Standard 2: Students will represent and analyze mathematical situations and properties using patterns, relations, functions, and algebraic symbols.</b>	
<b>Objective 2.1: Use patterns, relations, and functions to represent mathematical situations.</b>	
1. Compare and contrast relations and functions.	SE: 56-62 TWE: DI 58 ICE 57-59
2. Identify the domain and range of the absolute value, quadratic, radical, sine, and cosine functions.	SE: 89-95, 397-399, 523-528 <i>Graphing Calculator Investigation</i> 396 TWE: ICE 91-92
3. Use function notation.	SE: 59-62, 63-67, 89-95, 383-389, 390-394

	TWE: ICE 59, 64, 383-386 OEA 62 TNT 384
--	---

OBJECTIVES	PAGE REFERENCES
4. Find the compositions or combinations of two simple functions.	SE: 384-389 TWE: ICE 385-386
5. Find the inverse of a function by interchanging the values of domain and range, reflecting across the line $y = x$ , or by using algebra.	SE: 390-394 TWE: ICE 391
6. Relate the sine, cosine, tangent, cosecant, secant, and cotangent to the unit circle.	SE: 739-745, 746-751 TWE: ICE 740-742
7. Express angle measure in degrees or radians when given the trigonometric value.	SE: 701-708, 709-714 TWE: ICE 710-711
<b>Objective 2.2: Evaluate, solve, and analyze mathematical situations using algebraic properties and symbols.</b>	
1. Solve quadratic equations.	SE: 294-299, 301-305, 306-312, 313-319 TWE: ICE 295-296, 302, 307-309, 314-315
2. Solve first-degree absolute value equations.	SE: 29-32 <i>Extending the Lesson 299</i> <i>Prerequisite Skills 39</i> TWE: ICE 29
3. Solve radical equations including those with extraneous roots.	SE: 263-267, 362-364 <i>Graphing Calculator Investigation 268-269</i> TWE: ICE 264-265, 362
4. Solve single-variable quadratic and absolute value inequalities.	SE: 42-46, 329-335 TWE: ICE 42-43, 330-332
5. Write a quadratic equation when given the rational roots or zeroes of the function.	SE: 303-305 TWE: ICE 302
6. Solve systems of equations with no more than three variables using technology.	SE: 110-115, 116-122, 138-144, 189-194, 202-207 <i>Graphing Calculator Investigation 208</i> TWE: ICE 111-112, 116-119, 139-141, 203-204
7. Solve and graph systems of linear inequalities.	SE: 123-127, 129-134 <i>Graphing Calculator Investigation 128</i> TWE: ICE 123-125, 130-131 OEA 127
8. Add, subtract, multiply, and divide simple rational expressions and solve simple rational equations.	SE: 472-477, 479-484, 505-511 <i>Graphing Calculator Investigation 512</i> TWE: ICE 474-475, 506-507 OEA 478
9. Recognize that $a^{-n}$ is defined as the reciprocal of $a^n$ , i.e., $a^{-n} = \frac{1}{a^n}$ if $a \neq 0$	SE: 222-227 TWE: ICE 223-224
10. Recognize that rational exponents are used to represent radicals, i.e., $a^{p/q} = \sqrt[q]{a^p} = (\sqrt[q]{a})^p$ if $a \neq 0$ .	SE: 257-262 TWE: ICE 258-260
11. Represent intervals with correct symbolic notation; e.g., $a < x < b$ , $(a, b)$ , $[a, b]$ .	SE: 33-38, 40-46 TWE: ICE 35, 41-43
<b>Objective 2.3: Represent quantitative relationships using mathematical models and symbols.</b>	
1. Interpret rates of change by analyzing graphical and numerical data for quadratic and radical functions.	SE: 286-293, 294-299 TWE: ICE 287-289, 296

OBJECTIVES	PAGE REFERENCES
2. Find the vertex, maximum or minimum values, intercepts, and axis of symmetry of a quadratic or absolute value function, algebraically, graphically, and numerically.	SE: 286-293, 294-299, 322-327 <i>Extending the Lesson 299</i> TWE: ICE 287-289, 295, 323-324 OEA 293
3. Write the equation of a parabola in the form $y = a(x - h)^2 + k$ and a circle in the form $y = a(x - h)^2 + (y - k)^2 = r^2$ by completing the square.	SE: 419-425, 426-431 TWE: ICE 420, 427
<b>Standard 3: Students will solve problems using spatial and logical reasoning, applications of geometric principles, and modeling.</b>	
<b>Objective 3.2: Specify locations and describe spatial relationships using coordinate geometry.</b>	
1. Sketch the graph of a quadratic and absolute value function.	SE: 90-94, 294-299, 322-326, 499-503 TWE: ICE 91, 323-324
2. Sketch the solutions of absolute value and quadratic inequalities of one variable on a number line.	SE: 34-37, 40-46, 330-333 TWE: ICE 34-35, 41-42, 330-331
3. Sketch the solutions of absolute value and quadratic inequalities of two variables on a Cartesian coordinate system.	SE: 97-99, 329-334 <i>Extending the Lesson 335</i> TWE: ICE 97, 330
4. Sketch the graph of a square root function.	SE: 395-399, 500-501 TWE: ICE 396, 501
5. Write an equation of a parabola in the form $y = a(x - h)^2 + k$ when given a graph.	SE: 424
6. Graph sine and cosine functions.	SE: 741-742, 762-768, 769-776 TWE: ICE 765-766, 770-773
7. Perform the transformations of stretching, shifting, and reflecting the graphs of linear, absolute value, quadratic, and radical functions.	SE: 91, 322-327, 391-393 <i>Graphing Calculator Investigation 70, 320-321</i> TWE: ICE 323-325, 391
8. Perform transformation on the sine and cosine functions involving amplitude, period, phase shift, vertical shift, and reflections.	SE: 762-768, 769-776 TWE: ICE 765-766, 770-773
<b>Objective 3.3: Solve problems using visualization, spatial reasoning, and geometric modeling.</b>	
1. Solve problems involving absolute value and quadratic functions algebraically and graphically.	SE: 28-32, 34-38, 40-46, 294-299, 301-305, 306-312, 313-319, 322-326, 330-335
2. Solve problems using graphs of sine and cosine functions.	SE: 740-744, 762-768, 769-776 TWE: ICE 766, 773
<b>Standard 4: Students will understand and apply measurement tools, formulas, and techniques.</b>	
<b>Objective 4.1: Understand measurable attributes of objects and the units, systems, and processes of measurement.</b>	
1. Convert angle measurements between radians and degrees.	SE: 710-713 TWE: ICE 711
2. Calculate the exact values of the sine, cosine, and tangent functions for the special angles of the unit circle.	SE: 703-708, 739-744 TWE: ICE 741
<b>Objective 4.2: Determine measurements using appropriate techniques, tools, and formulas.</b>	
1. Find the length of an arc using radian measure.	Arc length is mentioned on page SE: 710
2. Find the area of a sector in a circle using radian measure.	SE: <i>Geometry 713</i>

OBJECTIVES	PAGE REFERENCES
<b>Standard 5: Students will draw conclusions using concepts of probability after collecting, organizing, and analyzing a data set.</b>	
<b>Objective 5.1: Formulate and answer questions by collecting, organizing, and analyzing data.</b>	
1. Determine the quadratic regression equation for a given set of bivariate data using technology.	SE: <i>Graphing Calculator Investigation</i> 300
2. Analyze the meaning of the maximum or minimum and intercepts of the regression equation as they relate to a given set of bivariate data.	This objective can be met during teacher/class discussion.
3. Make predictions and estimations and determine their reasonableness using a regression equation.	SE: 81-86 <i>Graphing Calculator Investigation</i> 87-88, 300, 359, 539-540 TWE: ICE 82-83
<b>Objective 5.2: Apply basic concepts of probability.</b>	
1. Identify the difference between a permutation and a combination.	SE: 638-642 TWE: SN 641
2. Calculate a probability using the Fundamental Counting Principle.	SE: 632-636, 644 TWE: ICE 633, 634
3. Calculate simple combinations and permutations of $n$ objects taken $r$ at a time.	SE: 638-642 TWE: ICE 639-640 OEA 643

### Codes Used for TWE Pages

DI	Daily Intervention
GCI	Graphing Calculator Investigation
ICE	In-Class Example
OEA	Open-Ended Assessment
SN	Study Notebook
TNT	Tips for New Teachers